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Subject: PCB, TBT and Lead TRV Comments  
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Here are DEQ's comments on the PCB, TBT and Lead DRAFT TRVs.

**PCBs/Fish:** The dioxin like effects for PCBs were not included in this TRV development. While the separation of TRV development into dioxin like effects and the effects of total PCBs is supported, there is some concern that the development of a dioxin-like TRV is currently not underway. We would recommend developing a dioxin like TRV for fish using appropriate dioxin like PCB and dioxin / furan data. DEQ has a dioxin-like fish TRV of 6.4 pg/g, which is significantly lower than what the LWG used as a provisional TRV during Round 2 screening of 90 pg/g.

DEQ's SSD based toxicity reference value was calculated at 172 ug/kg (as the mean), and a lower confidence limit of 21.1 ug/kg and a upper confidence limit of 570 ug/kg for fish and invertebrates combined. The calculated value here is 570 ug/kg (5th percentile) and 820 ug/kg (10th percentile) for fish. The EPA calculated TRV falls in the upper confidence value range of the DEQ SSD. The PCB dataset is populated mostly by mortality end studies. Due to the lack of studies in the chronic range protective of growth and survival, a closer look at a combined invertebrate / fish TRV should be considered. The invertebrate data can provide a good surrogate for low level fish effects, and several papers are available in this area (see DEQ's database). The end result is a more balanced SSD that is more in line with assessment endpoints. Please review DEQ's SSD development that used fish and invertebrate data, selecting NOER / LOER pairs from individual studies. For protection of 95% of the species, DEQ would recommend the mean value calculated as a part of our guidance development at 172 ug/kg. This is more in line with the AWC value used in conjunction with the BCF, which DEQ calculated as 77 ug/kg. Either of these values would be consistent with DEQ's Guidance for the Assessment of Bioaccumulative Chemicals in Sediment.

Another alternative would be assign more weight to the growth and reproduction data in this analysis and adjust the SSD accordingly.

As for fish papers specifically, one paper was not included in the EPA SSD that DEQ used, which is:

Freeman HC, Idler DR	Can J Biochem 53:666-670	Brook trout	Salvelinus fontinalis	freshwater	embryo	Adult fish	21 days	Whole body	<0.5	77.9
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Why was this study omitted (sorry I deleted your other PCB file so this my have already been explained)?

I did not have time to review the PCB invertebrate TRV in detail, but why wasn't the Neff paper included (see DEQ's database)?

Neff JM, Giam CS	Vernberg FJ, Calabrese A, Thurberg FP, Vernberg WB, editors. Physiological responses of marine biota to pollutants. New York: Academic Press. P21-35.	Horseshoe crab
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**TBT:** I did not have time to review this TRV. However, TBT is identified as a COPC for invertebrates only. It is important to note that there was not TBT data collected as a part of the Round 1 effort. It will be important to screen the Round 3 fish data with an appropriate TRV. My biggest question is how we are dealing with the other butyl tins that were detected (butyl tin and dibutyltin)? The Round 2 Report did not screen other butyl tins, only TBT, using a TRV of 49.9 ug/kg. Some of these other butyl tins were detected at significant concentrations in invertebrates and fish (e.g. crayfish at 333 ug/kg dibutyltin; Carp 37 ug/kg butyl tin). Are we applying the TBT TRV to the others? Are we going to develop separate TRVs if the data is available? On a separate topic if you are curious - TBT in mussels is showing up higher overall than in Corbicula - the highest mussel conc. was 16 ug/kg compared to the highest in Corbicula of 5.5 ug/kg.

**Lead/Fish:** I did not have much time to review this SSD. However, DEQ's SSD for lead was calculated as 13.4 ug/kg as the mean value protecting 95% of the species (0.0134 mg/kg). The value developed here is significantly higher at 4000 ug/kg. The papers selected by DEQ included 4 invertebrate papers and 1 fish paper (Holcombe et. al.). Based on the limited fish tissue data available, there may be more certainty in deriving a combined invertebrate / fish SSD TRV. Our analysis and SSD derivation would support this approach.

-Jennifer